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Long term breast cancer real-world overall survival in France

Olivier Tredan[1], Yann Delpech[2], Simona Bara[3], Marie Lotz[4], Manoel Moreau[5], Danko Stamenic[5], Majda Le Foll-Elfounini[5], Laura Mansi[6]

[1]Oncology Department, Centre Leon Berard, Lyon, France; [2]Senology Surgery Department, Centre Antoine Lacassagne, Nice, France; [3]Registre de la Manche, Centre Hospitalier du Cotentin, Cherbourg en Cotentin, France; [4]Medical Affairs Department, Roche France, Boulogne-Billancourt, France; [5]Medical Evidence & Data Science Department, Roche France, Boulogne-Billancourt, France; [6]Oncology Department, CHRU Jean Minjoz, Besançon, France

Background

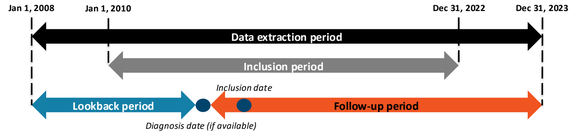
- The incidence of breast cancer (BC) in France is among the highest in the world.[1]
  - During 2022–2023, BC was the most common cancer and leading cause of cancer death among women in France, accounting for more than 61,200 new cancer cases and 12,700 deaths nationally.[2]
- With the several advances on the last decade in BC management, this analysis of the GREASE study aimed to estimate long term real-world overall survival (OS) among French women with BC.
  - Results were reported overall and in patients with metastatic BC, as well as grouped by molecular subtype.

Methods

Study design and population

- GREASE was a retrospective, observational analysis of data from the Echantillon du Système National des Données de Santé (ESND) database, which is a representative 2% sample of national healthcare data in the Système National des Données de Santé (French National Health Data System; SNDS).[3]
- The present analysis included women treated for an incident BC between Jan 1, 2010, and Dec 31, 2022 (**Figure 1**).

Figure 1. Study design.



- Patients included in the overall analysis and metastatic BC populations were grouped according to their BC molecular subtype, based on the treatment(s) received during follow-up (**Table 1**).

Table 1. Analysis and metastatic BC populations and subgroup definitions.

Population/subgroup	Definition
Analysis population	Women in the ESND with evidence of BC between Jan 1, 2010, and Dec 31, 2023, excluding those with: • First evidence of BC before Jan 1, 2010, or after Dec 31, 2022 • No specific treatment for BC during follow-up
Metastatic population	Patients without evidence of BC treatment during the 2 years historical period AND without surgery during the follow-up period
HER2+ subgroup HER2+/HR+ subgroup HER2+/HR− subgroup HR+/HER2− subgroup Classified as undefined subgroup Undefined with systemic therapy Undefined with *in situ* BC with no systemic therapy	Patients who received anti-HER2 therapy (± endocrine therapy) Patients who received both anti-HER2 and endocrine therapy Patients who received anti-HER2 therapy without endocrine therapy Patients who received endocrine therapy without anti-HER2 therapy Patients who received neither anti-HER2 nor endocrine therapy Patients who received systemic therapy (± locoregional therapy) Patients with an *in situ* BC diagnosis who received locoregional therapy only

Treatments and diagnoses were based on ATC, CCAM, and ICD-10 codes. ATC, Anatomical Therapeutic Chemical; BC, breast cancer; CCAM, Classification Commune des Actes Médicaux; ESND, Echantillon Système National des Don-nées de Santé; HER2, human epidermal growth factor receptor 2; HR, hormone receptor; ICD-10, International Classification of Diseases, Tenth Revision.

Outcomes

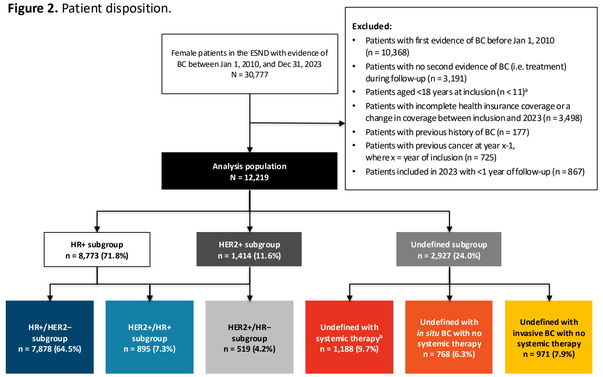
- Actuarial methodology with interval censoring was used to estimate OS rates and their corresponding 95% confidence intervals (CIs).
  - OS rates were defined as the proportion of patients who were alive at 5, 10, and 12 years from their first BC treatment date (systemic, surgery, or radiotherapy).
- All outcomes were assessed in the overall analysis and metastatic BC populations, as well as in molecular subtype subgroups.

Results

Analysis population

- In total, 30,777 women with evidence of BC were identified in the ESND database between Jan 1, 2010, and Dec 31, 2023; of these, 12,219 were included in the analysis population (**Figure 2**).
  - The mean (interquartile) age at first BC treatment was 61 (51–71) years.
  - Based on treatments received during follow-up, 64.5% of patients had HR+/HER2− disease, 7.3% had HER2+/HR+ disease, and 4.2% had HER2+/HR− disease.
- In total, 767 patients were included in the metastatic BC population, including 579 (75.5%) with HR+/HER2− disease, 103 (13.4%) with HER2+/HR+ disease, and 86 (11.2%) with HER2+/HR− disease.
- Among the undefined with systemic treatment subgroup, we assume that most patients are those with triple negative disease (TNBC) or HR+ patients with visceral crisis.

Figure 2. Patient disposition.

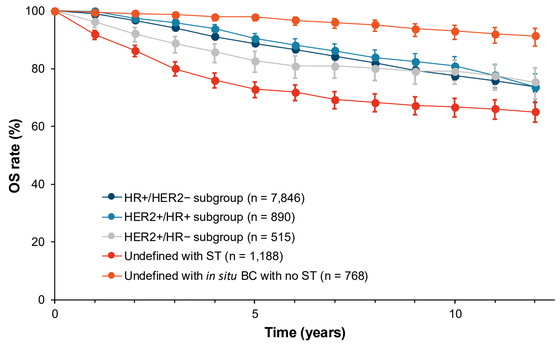


[a]Due to French SNDS data privacy regulations, data describing n < 11 patients could not be specified; [b]Included patients with invasive BC.
BC, breast cancer; ESND, Echantillon Système National des Données de Santé; HER2, human epidermal growth factor receptor 2; HR, hormone receptor; SNDS, Système National des Données de Santé.

Overall survival

- In the overall analysis population, estimated OS rates were 87.7% (95% CI 87.0–88.3) at 5 years, 78.0% (77.1–79.0) at 10 years, and 74.4% (73.2–75.5) at 12 years.
  - When the overall analysis population was grouped by molecular subtype, 5-, 10-, and 12-year OS rates were generally similar between the HR+/HER2−, HER2+/HR−, and HER2+/HR+ subgroups.
- Within the undefined subgroup (**Figure 3**), OS rates over 12 years were:
  - The lowest in patients with undefined BC with systemic treatment (65.1%; 95% CI 61.5–68.5).
  - The highest in patients with undefined *in situ* BC with no systemic therapy (91.4%; 87.9–94.0).

Figure 3. OS rates over 12 years in the overall analysis population, by molecular subtype.

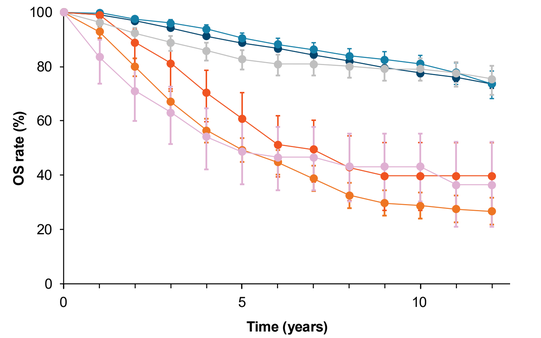


Error bars represent 95% confidence intervals.
BC, breast cancer; HER2, human epidermal growth factor receptor 2; HR, hormone receptor; OS, overall survival; ST, systemic therapy.

Overall survival in the metastatic BC population

- In the metastatic BC population, estimated OS rates were 50.8% (95% CI 46.9–54.6) at 5 years, 31.4% (27.1–35.7) at 10 years, and 29.0% (24.5–33.6) at 12 years.
- When the metastatic BC population was grouped by molecular subtype, HER2+ tumors, while aggressive, exhibit better long-term outcomes than HR+/HER2− tumors (**Figure 4**), likely due to effective anti-HER2 therapies.
  - Specifically, the HER2+/HR− subtype frequently demonstrates a prolonged period of stable disease or survival, creating a notable "plateau" on the survival curve.
  - In contrast, the HR+/HER2− subtype, despite initial treatment sensitivity, are known for late recurrences explaining the lower survival on a long term.

Figure 4. OS rates over 12 years in the metastatic BC population, by molecular subtype.



Error bars represent 95% confidence intervals.
BC, breast cancer; HER2, human epidermal growth factor receptor 2; HR, hormone receptor; OS, overall survival; ST, systemic therapy.

Study limitations

- Clinical data available in the ESND were limited; as such, we were unable to describe the analysis population in detail, and patients were grouped into molecular subtypes based on the treatments they received during follow-up.
- The exact date of death was not available at the individual level in the ESND and instead is reported in 1-year intervals; as such, we were unable to use Kaplan–Meier methodology to estimate OS.
- Our HR+ subgroup excluded patients with visceral crisis if they did not receive endocrine therapy during follow-up, which may have led to an overestimation of OS in the HR+ subgroup.

Conclusions

- **Our analysis of real-world OS in the GREASE study estimated that almost 75% of French women diagnosed with BC in 2010–2022 would be alive after 12 years.**
- **Overall OS rates over 12 years were similar between HER2+ and HR+ subgroups, demonstrating that recent therapeutic advances have improved outcomes for patients with HER2+ BC.**
- **In comparison, patients who received systemic therapy without endocrine or anti-HER2 therapy—which may include patients with TNBC or those with visceral crisis—had lower rates of OS, highlighting potential unmet needs in these populations.**
- **Survival in metastatic breast cancer is correlated with molecular subtype, with anti-HER2 therapies defining a distinct and more favorable prognosis for HER2+ tumors compared to HR+/HER2- tumors at 10 years.**

References

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Conflicts of interest

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Disclaimer

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